

## RESPONSE

Claims 1-46 are pending in the application.

The Examiner rejected claims 1-46 under 35 USC § 103 as being unpatentable. The Examiner's rejections of claims 1-46 are addressed herein below. Claims 47 and 48 have been previously withdrawn.

### I. SECTION 103 REJECTIONS

Claims 1-22, 24-43, 45 and 46 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the article "A Practical and Robust Bump-mapping Technique for Today's GPUs" by Kilgard ("*Kilgard*") in view of U.S. Patent 4,467,461 issued to Rice ("*Rice*"). Additionally, independent claims 23 and 44 were rejected as unpatentable over *Kilgard* in light of *Rice* and U.S. Patent 6,396,495 issued to Parghi et al ("*Parghi*").

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge then-generally available to one of ordinary skill in the art, to modify the reference or to combine referenced teachings. MPEP § 706.02(j). Second, there must be a reasonable expectation of success. *Id.* Finally, the prior art reference (or references when combined) must teach or suggest all of the claim limitations. *Id.*

#### A. Claims 1, 24, 25, 27, 45 and 46

##### 1. There is no motivation to combine *Kilgard* and *Rice*

The Examiner suggests that *Kilgard* discloses each of the limitations in the independent claims (1, 24, 25, 27, 45 and 46), literally or inherently, except the step of "selecting a first attribute and a second attribute from multiple attributes." Office Action, p. 5. The Examiner further suggests that *Rice* discloses this step. *Id.* ("multiple attributes are selected for output to

display and therefore inherently, first and second attributes are selected from multiple attributes.”) The Examiner then argues:

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the selecting, analyzing and displaying of geophysical data attributes of Rice with the computer graphics bump-mapping techniques of Kilgard in order to convey multiple pieces of information to the user in a single display screen by combining different attributes together and represented graphically using different effects, therefore creating an increase in yielded information to a user (see column 1, lines 47-54 of Rice).

*Id.* at pp. 5-6. In support of this argument for combining *Rice* and *Kilgard*, the Examiner suggests that “Kilgard’s techniques of bump-mapping are *often associated* with the displaying of geographic data which Rice is clearly directed towards.” *Id.* at p. 6 (emphasis added). *Kilgard*, however, never mentions the use of bump-mapping techniques on geographic data – much less geophysical data. The techniques described in *Kilgard* are directed to video game applications. One of ordinary skill in the art therefore, would hardly be predisposed, on any objective basis, to consider the computer graphics bump mapping techniques applied to video games in *Kilgard* when faced with processing and/or interpreting geophysical data attributes – particularly when attempting to form an image representing select features of an object comprising multiple attributes.

Even assuming, *arguendo*, that an attribute is represented in the texture data of *Kilgard*, there is no motivation to combine the techniques applied to video games in *Kilgard* with the geophysical data attributes in *Rice*. See *In re Rouffet*, 149 F.3d 1350, 1357 (Fed. Cir. 1998) (The combination of the references taught every element of the claimed invention, however without a motivation to combine, a rejection based on a *prima facie* case of obvious was held improper.).

**2. The combination of *Kilgard* and *Rice* would render both inoperable**

A combination is not proper if the intended function of each would be destroyed. *In re Gordon*, 733 F.2d 900, 901 (Fed.Cir.1984). *Kilgard* is directed to bump mapping techniques, which accurately simulate lighting effects caused by patterned irregularities on otherwise locally smooth surfaces. *Kilgard*, p. 1 (Abstract). *Rice* is directed to displaying a selected plurality of measurable properties of geophysical data to empirically derive the best combined presentation of the selected attribute properties for interpretation, wherein data may adjusted in accordance with operator selected colors and color intensity. *Rice* (Abstract). Combining *Kilgard* and *Rice* destroys the intended function of each. For example, the combination would not permit *Kilgard* to accurately simulate lighting effects since *Rice* teaches that the data may be adjusted with operator selected colors and color intensity for interpretation purposes, rather than realism. Likewise, the combination would not permit *Rice* to perform such a function since *Kilgard* teaches realistic simulation of lighting effects. As demonstrated, there could be no reasonable expectation of success from the combination of the *Kilgard* and *Rice*.

**3. The combination of *Kilgard* and *Rice*, nevertheless, fails to teach or suggest all of the independent claim limitations**

Independent claims 1, 24, 25, 27, 45 and 46 each include the step of “combining an ambient lighting component with the diffuse lighting component” and “at least one of the first and second attributes” or “the attribute.” Even assuming, *arguendo*, *Kilgard* teaches “blending both the ambient illumination component and a diffuse illumination component” as suggested by the Examiner, neither *Kilgard* nor *Rice* teaches combining the same with “at least one of the first and second attributes” or “the attribute” as required by the independent claims. The Examiner

simply does not address this essential step, which is necessary to “form an image representing a select feature of the object.”

Independent claims 1, 24, 25, 27, 45 and 46 are therefore, patentable over *Kilgard* in view of *Rice* and/or *Parghi*.

**B. Claims 2-23, 26 and 28-44**

Based on the foregoing remarks, and because claims 2-23, 26 and 28-44 ultimately depend from independent claims 1, 25 or 27, these claims are likewise patentable over *Kilgard* in view of *Rice* and/or *Parghi*. Additionally, claims 2-4 and 28-30 are patentable in and of themselves over *Kilgard* in view of *Rice*.

**1. Claims 2-4 and 28-30**

Dependent claims 2-4 and 28-30 each include the limitation of creating a new attribute by combining two existing attributes. Specifically, claims 2-4 and 28-30 provide:

- “wherein at least one of the first attribute and the second attribute comprise a combination of two or more attributes.” (Claims 2 and 28);
- “wherein the combination of two or more attributes form a hybrid attribute.” (Claims 3 and 29); and
- “wherein the first attribute comprises any combination of two or more attributes comprising ...” (Claims 4 and 30).

The Examiner suggests that *Rice* discloses a system wherein “multiple attributes are selected for output to display and therefore inherently combination [sic] of attributes are selected from multiple attributes.” The Examiner further suggests that *Rice* teaches that:

multiple attributes are selected for output to display and therefore inherently, combination of attributes are selected from multiple attributes and shown together which is interpreted functionally equivalent to Applicant’s “hybrid” attribute.

However, *Rice* does not teach any combination of attributes, but rather teaches a display of attributes *without reference to combining the attributes* – much less to forming a hybrid attribute:

The rasterized data output of selected attributes or properties of the data are then output for storage in one or more of attributes tapes 14, 16 and 18 whereupon they are ready for interactive introduction to the display. The selected attributes may be any of the selected parameters or property values of the input data; for example, in the case of seismic data input, the variables might be amplitude, frequency, envelope (energy), phase, instantaneous velocity, etc.

Rice, Column 3, Lines 14-23. As *Rice* fails to teach combining attributes to form a first attribute, second attribute, or hybrid attribute, it does not inherently teach combining attributes. Dependent claims 2-4 and 28-30 are therefore, patentable over *Kilgard* in view of *Rice*.

## II. CONCLUSION

Based on the remarks and analysis herein, independent claims 1, 24, 25, 27, 45 and 46 are patentable over *Kilgard* in view of *Rice*. Because claims 2-23, 26 and 28-44 ultimately depend from independent claims 1, 24, 25, 27, 45 or 46, these claims are likewise patentable over *Kilgard* in view of *Rice* and/or *Parghi*. The prior art made of record but not relied upon is also felt to be patentably distinguished from the claimed invention.

Applicant therefore, respectfully requests reconsideration and allowance of all claims or, in the alternative, a telephonic interview to discuss the merits of the prior art relied upon by the Examiner.

The Commissioner is hereby authorized to charge the two-month extension fee, any other amount required, or credit any overpayment, to Account No. 50-3385. A duplicate copy of this sheet is enclosed.

Respectfully submitted,

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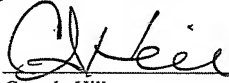
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